

BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 3

APRIL 1957

PART 20

INSTITUTE NEWS

Jubilee Spring Meeting

The Jubilee Spring Meeting will be held in London from Monday 28 April to Friday 2 May 1958. Visits to works in the provinces will take place on Monday and Tuesday 5 and 6 May.

Spring Meeting 1957

All members resident in Europe should by now have received a copy of the Spring Meeting Programme and reply form. If any member has failed to receive one, he should write without delay to the Secretary.

Powder Metallurgy Joint Group

The Councils of the Iron and Steel Institute and the Institute of Metals have agreed to form a Powder Metallurgy Joint Group to act within the existing framework of the Institutes. Full details will be announced in due course.

Symposium on "Vacancies and Point Defects in Metals and Alloys"

As already briefly announced, the Metal Physics Committee is arranging a Symposium on "Vacancies and Point Defects in Metals and Alloys". The meeting will be held at Harwell on a date in December 1957 which it is hoped to publish shortly. Attendance will be restricted to those who have registered in advance.

"Metallurgical Reviews"

The first part of *Metallurgical Reviews* for 1957, now published, contains the following: "The Theory of Rolling", by Professor HUGH FORD, "Zone Melting", by W. G. PFANN, and "Bonding in Metals", by ROLAND KIESSLING.

Metallurgical Reviews is obtainable only by annual subscription: 42s. 6d., post free; 32s. 6d., post free, to members of the Institute. The issues of 1956 are still available, at the same rates. The contents of Volume I will be found on p. 24 of the advertisement section of the February issue of the *Journal*.

Annotated Equilibrium Diagram No. 11

A revised version of Annotated Equilibrium Diagram No. 11: "The Iron-Nickel System", by Mr. R. W. FLOYD, has recently been published. Several modifications have been

made to the diagram originally published in March 1955. Copies may be obtained from the Institute at the following prices (post free):

Members (one copy only)	1s. od. (\$0.40)
Non-members	2s. od. (\$0.50)
Libraries	1s. 8d. (\$0.40)

Election of Members

The following 1 Overseas Sustaining Member, 17 Ordinary Members, 1 Junior Member, and 21 Student Members were elected on 6 March 1957:

As Overseas Sustaining Member

KAMANI METALS AND ALLOYS, Ltd., Agra Road, Kurla (North), Bombay 37, India.

As Ordinary Members

ALBERT, Philippe, Doct. ès Sc., Ingénieur de Recherche, Centre d'Etudes de Chimie Métallurgique (CNRS), 15 rue Georges-Urbain, Vitry-sur-Seine, France.

BOESCHOTEN, Frans, Dr., Physicist, Reactor Centrum Nederland, Scheveningseweg 112, 's-Gravenhage, Netherlands.

BRAY, Harold James, B.Sc., Ph.D., F.I.M., Senior Lecturer in Metallurgy, Manchester College of Science and Technology, Sackville Street, Manchester.

DUMAS, André Emile Marie, Ing., Directeur, L'Aluminium Français S.A., 23 bis rue Balzac, Paris (8^e), France.

GADGIL, Ulhas Mahadeo, B.Sc., Superintendent of Workshops, Sir Cusrow Wadia Institute of Electrical Technology, Poona 1, India.

GIBSON, Maynard, A.R.I.C., Manager of Laboratories, Mullard Magnetic Components, Mullard Blackburn Works, Ltd., Balmoral Drive, Crossens, Southport, Lancs.

GREENWOOD, Douglas Paul, Senior Technical Representative (North West England), Foundry Services, Ltd., Long Acre, Nechells, Birmingham 7.

HOPKINS, Robert James, Dipl.Met., Research Superintendent, The Broken Hill Associated Smelters Proprietary, Ltd., Box 219A, P.O., Port Pirie, South Australia.

KAMANI, Hasmukh Ramji, Deputy General Manager, Kamani Metals and Alloys, Ltd., Agra Road, Kurla (North), Bombay 37, India.

LAUGHLAND, Hugh, Branch Sales Manager, Sprostons Ltd., 2 Broadway, Port of Spain, Trinidad, B.W.I.

REID, Brian John, M.Sc., Metallurgist, Metal Manufactures, Ltd., Box No. 21, Port Kembla, N.S.W., Australia.

NEW OFFICERS

- RÜEGG, Werner, Dipl.Ing.-Chem., Dr.sc.techn., Chemiker, Injecta Aktiengesellschaft, Teufenthal, Switzerland.
- SCHOEFFER, Ernest Alexander, C.E., Executive Vice-President, Alloy Casting Institute, 286 Old Country Road, Mineola, N.Y., U.S.A.
- TALBOT, Jean Henri Jacques Eugène, Doct. ès Sc., Chef de Travaux, Faculté des Sciences, 11 rue Pierre Curie, Paris (5^e), France.
- TODD, Alan Livesey Stuart, J.P., M.A., Director, National Association of Drop Forgers and Stampers, Grove Hill House, 245 Grove Lane, Handsworth, Birmingham 20.
- WATSON, Cecil Herbert, General Manager, The Tinsplate Company of India, Ltd., Golmuri P.O., Dist. Singhbhum, S.E. Rly., India.
- ZATAKIA, Nautamkant Harilal, B.Sc., L.I.M., Assistant Manager, Engineering Department, Kamani Metals and Alloys, Ltd., Agra Road, Kurla (North), Bombay 37, India.

As Junior Member

- BAIRD, James Douglas, B.Sc., A.R.T.C., Research Metallurgist, Associated Electrical Industries Research Laboratory, Aldermaston Court, Aldermaston, Berks.

As Student Members

- ALLAN, David Brian, Student of Metallurgy, Battersea College of Technology, London, S.W.11.
- BATES, Alan Peter, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- BONFIELD, William, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- CHAMBERS, Leonard Henry, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- COWEN, Anthony Geddes, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- DAY, Arnold, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- DUXBURY, James Keith, B.Sc., Graduate Research Student, Department of Metallurgy, University of Cambridge.
- FLETCHER, Richard, Undergraduate, Faculty of Technology, University of Manchester.
- GOODWIN, Peter Roland, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- HICKS, Richard John, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- HILL, John Victor, Student of Metallurgy, Birmingham College of Technology; Junior Technical Assistant, Barker and Allen, Ltd., Spring Hill, Birmingham 18.
- LEVY, Julian Michael, Undergraduate, Department of Metallurgy, University of Birmingham.
- LEWIS, Alan Frederick Grantley, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- LINGARD, John Harry, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- MURDEN, Keith Bryan, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- OWEN, Robert Anthony, Undergraduate, Department of Metallurgy, King's College, University of Durham, Newcastle-upon-Tyne.
- READ, David Trevett, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- SIVERNIS, Michael John, Metallurgist, Quasi Arc Company, Ltd., Moxley Road, Bilston, Staffs.
- SMITH, Brian Charles Henry, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.

- SNOWMAN, Alfred, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.
- WILLIAMS, Howell Denzil, Undergraduate, Royal School of Mines, Prince Consort Road, London, S.W.7.

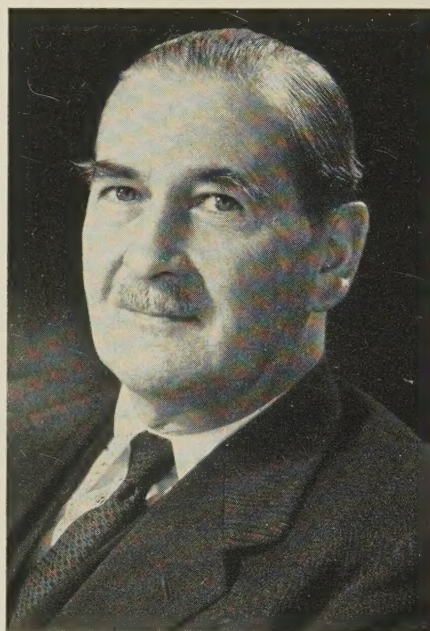
NEW OFFICERS

Below are given some biographical details of members who take office as President, Vice-Presidents, and Ordinary Members of Council at the Annual General Meeting on 30 April.

Dr. L. B. Pfeil

(President)

Leonard Bessemer Pfeil was born in London in 1898, and was educated at St. Dunstan's College and Woolwich Polytechnic. After service in the R.F.C., he went to the Royal School of Mines, where he obtained the A.R.S.M. in 1921, with the award of the Bessemer Medal. In the same year he



graduated in the University of London, with first-class honours in Engineering Metallurgy, and later obtained the M.Sc. and D.Sc. degrees of the same University.

In 1921 he became Assistant Lecturer in Metallurgy in the University College of Swansea, and in 1927 was appointed Lecturer, a position which he occupied until 1930, when he joined The Mond Nickel Co., Ltd. as Assistant Manager of the Research and Development Department, with charge of the Research Laboratory at Birmingham. For the next fifteen years Dr. Pfeil directed research on a wide range of ferrous and non-ferrous materials, including the constitution of non-ferrous alloys, age-hardening of alloys, high-temperature materials, the transformation characteristics of steels, hardenability, the response of steels to heat-treatment, and powder metallurgy. During the war, Dr. Pfeil was responsible for research on high-temperature alloys for aircraft gas turbines, which led to the development of the well-known series of Nimonic alloys, and was also closely associated with

NEW OFFICERS

other investigations connected with the war effort. He was awarded the O.B.E. in 1947.

Dr. Pfeil has participated for many years in co-operative research in the metallurgical field, and has been called upon to serve on various Governmental Committees dealing with the properties and control of metals and alloys, including the Inter-Service Metallurgical Research Council and the Metals Economy Advisory Committee to the Minister of Supply. He also takes an active interest in scientific and technical education, and was a member of the Joint Education Committee set up in 1945 by the five Metallurgical Institutes to consider the education of metallurgists.

In 1945 Dr. Pfeil became Manager to the Development and Research Department of his Company, with headquarters in London, and in 1951 was made a Director of the Company. He is also a Director of its associate, Henry Wiggin and Co., Ltd. In 1955 Dr. Pfeil relinquished the Managership of the Development and Research Department in order to devote himself entirely to the duties of Directorship.

Dr. Pfeil's membership of the Institute of Metals dates from 1923. He served on the Council from 1945 to 1949 and again from 1950 to the present time; he has also acted as Chairman of the Publication Committee. He is a Fellow of the Institution of Metallurgists, of which he was President from 1953 to 1954. He has been a member of the Iron and Steel Institute since 1926, and is also a member of several of the principal scientific societies in the U.S.A.

In 1951 he was elected a Fellow of The Royal Society.

The Hon. John Grimston

(Vice-President)

John Grimston was born in 1912 and educated at Oundle and Christ Church, Oxford. In 1936 he joined Enfield Zinc Products, Ltd., and in 1938 Enfield Rolling Mills, Ltd., of which company he is now Managing Director.

During the last war Mr. Grimston served as a pilot in Coastal Command. From 1943 to 1945 and again since 1950 he has



represented the St. Albans division of Hertfordshire in Parliament.

Mr. Grimston has been a member of the Executive of the British Non-Ferrous Metals Federation since 1950 and Vice-

President since 1955. He has served as an Ordinary Member of Council of the Institute since 1953 and is a Member of the Finance and General Purposes Committee.

Marshal of the Royal Air Force, The Lord Tedder

(Vice-President)

Arthur William Tedder, son of the late Sir Arthur John Tedder, was born in 1890 at Glenguin, Stirlingshire. After being educated at Whitgift School, Croydon, and Magdalene



College, Cambridge, he entered the Colonial Service. At the outbreak of war in 1914 he returned to England to join the Army, being commissioned in the Dorsetshire Regiment. Subsequently he was seconded to the Royal Flying Corps, with which he served in France and Egypt.

On the creation of the Royal Air Force, Lord Tedder was commissioned in that Service and quickly gained promotion. At the outbreak of the Second World War, he was Director-General of Research and Development, Air Ministry. In 1941 he was appointed Air Officer Commanding in Chief, R.A.F., Middle East, and in 1943 he became Deputy to General Eisenhower at Supreme Headquarters, Allied Expeditionary Force. At Berlin on 7 May 1945, Lord Tedder signed the ratified document of unconditional surrender terms on behalf of the United Kingdom. At the end of the War in Europe, he was created first Baron Tedder of Glenguin and in 1946 succeeded Lord Portal of Hungerford as Chief of the Air Staff.

Since his retirement from the Service, Lord Tedder has continued to devote much time to the activities of the R.A.F. and to the welfare of those who serve in it, and in 1953 he was elected President of the Royal Air Force Association. In 1950 he joined the Board of the Distillers Co., Ltd., and in 1954 he was appointed Chairman of the Standard Motor Co., Ltd. He has also taken part in many national and business activities, including serving a term as a Governor of the B.B.C. He has been Chancellor of Cambridge University since 1950.

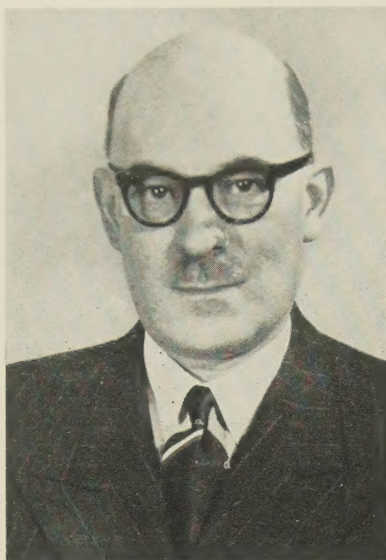
Lord Tedder holds many British and foreign decorations and has received honorary degrees from a number of universities. He was awarded the C.B. in 1937 and created K.C.B. and G.C.B. in 1942.

PERSONALITIES

Professor J. W. Cuthbertson

(Member of Council)

Joseph William Cuthbertson was born in 1901 at Manchester. He was educated at Manchester Grammar School and the



Victoria University of Manchester, where he studied metallurgy, graduating with first-class honours in 1924. He was subsequently awarded a Simon-Carves Industrial Research Scholarship for research in fuel technology, on the results of which he obtained the degree of M.Sc. He was appointed Assistant Lecturer in Metallurgy at Manchester University at the end of 1928 and retired from the staff of the University in 1944, at which time he held the post of Senior Lecturer in Electrometallurgy. He was awarded a Carnegie Scholarship of the Iron and Steel Institute in 1932, for research on the fatigue of steel. He was awarded the degree of D.Sc. in 1939.

In 1942 Professor Cuthbertson was seconded to the Ministry of Supply, and for several years was concerned with the production of armour-piercing projectiles and latterly with research on improving the fatigue resistance of laminated and coil springs. He joined the staff of the Tin Research Institute in 1945 as Assistant Director of Research, and retained this post until his appointment to the Cripps Chair of Metallurgy at the University of Nottingham in September 1954.

Professor Cuthbertson's research has been mainly in the fields of electrometallurgy and the mechanical properties of metals. He has contributed a number of papers to the *Journal* of the Institute of Metals. He is an Associate Member of the Institution of Electrical Engineers and a Fellow of the Institution of Metallurgists. He is a Past President of the Institute of Metal Finishing, a member of the Council of the Institution of Metallurgists, and a member of the Publication Committee of the Institute of Metals.

Sir Ronald Prain

(Member of Council)

Ronald Lindsay Prain was born at Iquique, Chile, in 1907, and educated at Cheltenham College.

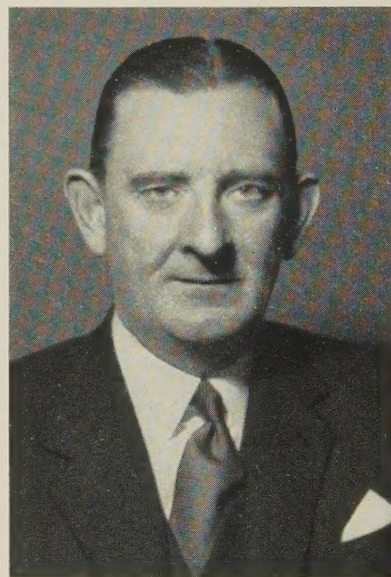
In 1926 he joined The Anglo Metal Co., Ltd., of which he was made a Director in 1936 and Chairman in 1946. In 1939

he joined the Board of Rhodesian Selection Trust, Ltd., in 1943 he became Managing Director of Roan Antelope Copper Mines, Ltd., and Mufulira Copper Mines, Ltd., and in 1950 he became Chairman of these three Companies. During this period he also joined the Boards of Selection Trust, Ltd. (1944), San Francisco Mines of Mexico, Ltd. (1946), and others.

Sir Ronald was Controller of Diamond Die and Tool Control, Ministry of Supply, 1940-45, and of Quartz Crystal Control, Ministry of Supply, 1943-45. He is a Director of The International Nickel Company of Canada, Ltd. (1951) and a Member of the Advisory Committee of that Company and of The Mond Nickel Co., Ltd. He is Chairman of the Merchant Bank of Central Africa (1956) and is a Director of Barclays Bank D.C.O. (Rhodesian Local Board) (1953) and Wankie Colliery Co., Ltd. (1953).

In 1953, when Roan Antelope Copper Mines, Ltd., Mufulira Copper Mines, Ltd., Rhodesian Selection Trust, Ltd., and other associated Companies moved their Head Offices to Rhodesia, he continued as Chairman, and is now Chairman and President of these and other Companies in what is now known as the Rhodesian Selection Trust Group of Companies.

He has been Chairman of the Management Committee of the Copper Development Association since 1949 and Chairman of Council of the Association since 1951. He is also a Member of Council of the British Bureau of Non-Ferrous Metal Statistics, British Non-Ferrous Metals Research Association (Vice-President), British Overseas Mining Association (President 1952), and The Royal African Society (Vice-President). In addition he is a Member of Council of Cheltenham College.



Sir Ronald was awarded the O.B.E. in 1946 and knighted in 1956.

PERSONALITIES

Dr. Maurice Cook

(Institute of Metals (Platinum) Medallist 1957)

Born at Hartlepool in 1897, Maurice Cook received his metallurgical education and training at the Universities of Manchester and Cambridge. He graduated B.Sc., with first class honours in Metallurgy, in 1919, and was awarded the

Leblanc Medal. He obtained the M.Sc. degree in 1920, and was subsequently awarded the Ph.D. (Cambridge) and D.Sc. (Manchester) degrees and the Honorary Associateship of the Birmingham College of Technology.



From 1919 to 1921 he was engaged in research and lecturing at Manchester University, and from 1921 to 1924 he carried out research in the Goldsmiths' Laboratory at Cambridge. From 1924 to 1926 he was on the technical staff of Messrs. C. A. Parsons and Co., Ltd., Newcastle-upon-Tyne. He joined the staff of Kynochs, Ltd., in 1926, became Research Manager of the Metals Division of Imperial Chemical Industries, Ltd., in 1938, was appointed a Director in 1942, Joint Managing Director in 1951, and Chairman in 1957.

Dr. Cook has served on the General Council of the British Standards Institution, the Inter-Service Metallurgical Research Council, the Welding Research Council, the Council of the Electrodepositors' Technical Society, and the Ministry of Supply Metallurgy Committee, and he has been Chairman of the Midland Metallurgical Societies, President of the Birmingham Metallurgical Society, Chairman of the Metallurgy Advisory Committee of the City of Birmingham Education Department, and President of the Institution of Metallurgists, of which he is a Founder Fellow. He is Chairman of the British Non-Ferrous Metals Research Association, and a member of Council of the Aluminium Development Association.

He is the author of many papers, about forty of which have been published in the Institute's *Journal*, covering a wide range of non-ferrous metallurgical subjects, including the constitution of alloys, the physical and mechanical properties of metals and alloys, deformation, recrystallization, and grain growth in metals, metal melting, casting, and rolling, the testing of materials, welding, electrodeposition, and the history of metallurgy.

In 1953 he delivered the Autumn Lecture at the Southport Meeting of the Institute, and in 1954 the Robert Horne Memorial Lecture to the Society of Chemical Industry.

Elected a member in 1918, Dr. Cook has rendered prominent service to the Institute of Metals and has been a member of most of its Committees. He was Chairman of the North East Coast Local Section in 1926-27, Chairman of the Birmingham Local Section in 1934-36, served as a Member of Council from 1939 to 1943 and 1947 to 1951, as a Vice-President from 1943 to 1946 and 1954 to 1955 and as President in 1955-56.

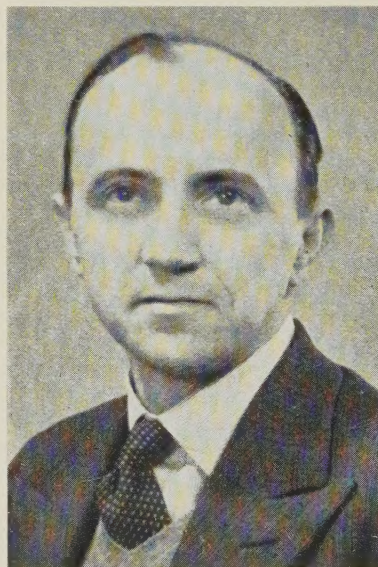
Dr. H. K. Hardy

(Rosenhain Medallist 1957)

Harold Kenyon Hardy was educated at the Lower School of John Lyon, Harrow, and the Royal School of Mines, Imperial College of Science and Technology, where he gained the A.R.S.M. degree. His working career has been spent almost entirely in research and development. While with the Northern Aluminium Co., Ltd., and Aluminium Laboratories, Ltd., Banbury, from 1940 to 1946, his field of work lay chiefly in applied research. Detailed studies of the metallography of wrought aluminium alloys and the development of high-strength alloys fostered an interest both in age-hardening and in the principles underlying the more scientific approach to alloy development, and led to the award of the M.Sc. and Ph.D. degrees.

Fundamental research into physical metallurgy, accompanied by excursions into alloy thermodynamics, occupied much of his attention while Senior Metallurgist with the Fulmer Research Institute (1946-55). A continuing flow of published papers (many of them in the Institute's *Journal*) has come from an active school built up at Fulmer to study precipitation phenomena, the main purpose being to provide a better understanding of the atomic processes by which simple and complex alloys respond to heat-treatment.

Problems of research direction and administration claimed Dr. Hardy when he joined the Research and Development Branch of the U.K. Atomic Energy Authority (Industrial Group) in 1955. As Deputy Head of Laboratories at Springfield, he is responsible for development work leading to the



manufacture and satisfactory performance of fuel elements for nuclear reactors.

Dr. Hardy received the Beilby Memorial Award and the D.Sc. of London University in 1955.

Mr. E. Griffin

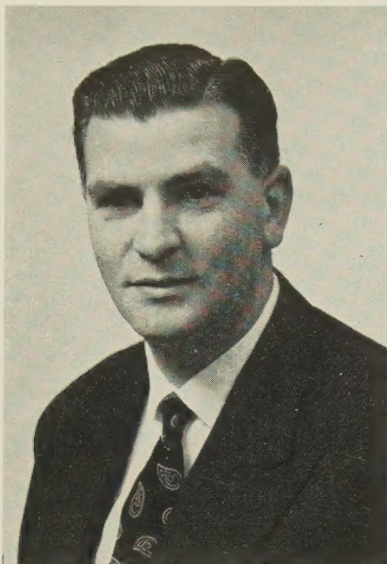
(W. H. A. Robertson Medallist 1956)

Eric Griffin was born at Langley in 1919 and, after being educated at St. Michael's C.E. School, he began work in 1933 as a junior in the offices of the Metal Sections Department of Accles and Pollock, Ltd., Oldbury. Subsequently,

PERSONAL NOTES

he served an apprenticeship in the drawing office of that firm and gained experience in the workshops. At the same time he attended part-time courses in mechanical and production engineering at Smethwick Municipal College and gained the Ordinary and Higher National Certificates.

In 1942 Mr. Griffin became engaged on the design and development of specialized plant and tools, and in 1946 he was appointed Works Engineer of Metal Sections, Ltd., which, like Accles and Pollock, Ltd., is a member of the T.I. group.



In this capacity he was responsible for the dismantling and re-installation of the cold-rolled section mill at new premises at Broadwell Works, Oldbury. In 1952 he was appointed to his present position of Chief Engineer of the Company, with special responsibility for the design and development of light-gauge sections as structural members in buildings.

Mr. Griffin is an Associate Member of the Institution of Mechanical Engineers, of the Institution of Production Engineers, and of the Work Study Society. He is also a member of the Technical Committee of the Cold-Rolled Sections Association.

PERSONAL NOTES

DR. T. R. ANANTHARAMAN has resigned his post with Gebrüder Schoch Hartchromung G.m.b.H., Stuttgart, to become Assistant Professor in the Department of Metallurgy, Indian Institute of Science, Bangalore, S. India.

DR. MAURICE COOK has been appointed Chairman of Imperial Chemical Industries, Ltd., Metals Division.

MR. H. E. DIXON has been appointed Chief Metallurgist to Atomic Power Constructions, Ltd., London.

MR. ST. J. ELSTUB has been appointed Joint Managing Director of Imperial Chemical Industries, Ltd., Metals Division.

MR. P. R. VAUGHAN EVANS has taken up an appointment in the Physical Metallurgical Section of the Research Department, Metropolitan-Vickers Electrical Co., Ltd., Manchester.

MR. G. GODDARD has been appointed Deputy Director Inspection (Materials), Aeronautical Inspection Directorate, Ministry of Supply, Harefield, Middlesex.

MR. A. PARKER HAGUE has relinquished his appointment as Director of the Mond Group of Companies, with which he had been associated since 1930. He will continue as Chairman of the Chronite Foundry Co., Ltd.

MR. J. E. HARRIS has received the Ph.D. degree of the University of Birmingham.

MR. A. H. HOLDEN has left British Furnaces, Ltd., Chesterfield, and is now with Gibbons Gas Carburizing, Ltd., Birmingham.

MR. B. W. HOWLETT has received the Ph.D. degree of the University of Birmingham.

DR. J. E. HUGHES has left the Research Laboratories of the Associated Electrical Industries, Ltd., Aldermaston, to take charge of the Metallurgy Section at the newly created Siemens-Ediswan Research Laboratory, Brimsdown, Middlesex.

MR. D. HULL has been awarded the Ph.D. degree of the University of Wales and is now engaged at the Atomic Energy Research Establishment, Harwell.

M. RENE KAUFFMANN has received the honour of Chevalier of the Légion d'Honneur.

MR. H. W. KING has received the Ph.D. degree of the University of Birmingham.

MR. I. J. POLMEAR has been awarded the M.Sc. degree of the University of Melbourne.

MR. A. K. SEAL has returned to India, having obtained the Ph.D. degree of Sheffield University. He is now Lecturer in Metallurgy at B.E. College, Shibpore, Howrah, W. Bengal.

MR. A. W. TAYLOR has joined the Engineering Development Department of the Consolidated Mining and Smelting Co. of Canada, Ltd., Trail, B.C.

MR. E. V. TULL has been awarded the Ph.D. degree of the University of Wales, and has now taken up an appointment as Chief Metallurgist to N. C. Ashton, Ltd., Huddersfield.

DR. D. W. WAKEMAN has left the Metallurgy Department of the University of Sheffield to take up an appointment with The Mond Nickel Co., Ltd., Birmingham.

DR. R. J. WASILEWSKI has resigned his position as Lecturer in Physical Metallurgy at Liverpool University and taken a post with E. I. du Pont de Nemours and Co., Experimental Station, Wilmington, Del.

MR. J. G. YOUNG has left The British Aluminium Co., Ltd., and is now Senior Investigator in the Non-Ferrous Section of British Welding Research Association, Abington, Cambridge.

Death

The Editor regrets to announce the death of Mr. JOHN CONACHER, a student at Manchester University, on 1 February 1957.

OBITUARY

Mr. R. E. L. Tricker

Mr. Reginald Ernest Lanham Tricker died after a short illness on 22 December 1956. Born in Bristol, Mr. Tricker was educated at Hulme Grammar School and the University of Manchester, where he obtained the B.Sc. and M.Sc. degrees. After about ten years with the Rover Co., Ltd., he joined the Smiths Group of Companies as Chief Metallurgist, a post which he held up to his death. At Smiths his interest lay chiefly in metals for use in instruments.

Mr. Tricker was a Fellow of the Institution of Metallurgists and had been a member of the Institute of Metals since 1944.

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

New Associated Society

The Council has accepted an application by the East Midlands Metallurgical Society to become an Associated Society. Under this arrangement, members of the Institute of Metals will have the privilege of attending the meetings of the Society and receiving notices of meetings without payment of an additional subscription.

The meetings of the Society are normally held at Nottingham throughout the winter session. Any member of the Institute who would like to be registered to receive notices of the meetings of the Society should advise the Secretary of the Institute.

The President of the East Midlands Metallurgical Society is Mr. E. D. KNIGHTS, B.Sc., F.I.M., and the Honorary Secretary is Mr. P. A. BLACKWELL, B.Sc., A.I.M., 57 Derby Lane, Derby.

South Wales Local Section

At a meeting held at University College, Swansea, on 15 January 1957, Major P. L. TEED (a Director of Vickers-Armstrongs (Aircraft), Ltd.) gave a lecture on

Fatigue

The lecturer made a broad survey of his subject, under four headings. First, he dealt with the early history of fatigue, pointing out that, in spite of what the popular Press might currently suggest to the contrary, the fatigue of metals was no recent disastrous discovery of the aircraft industry. The phenomenon had been hazily appreciated even before the French Revolution, and further knowledge with regard to it had since been continuously gained at an ever-accelerating pace. Today, the earnest student was faced with some five thousand papers dealing with fatigue, and their number was rapidly increasing. Major Teed then briefly reviewed the notable contributions which, over nearly a century, had been made by Arnoux, Marcoux, Albert, Poncellet, Fairbairn, and Wöhler.

In the second part, he showed photographs of fractures of iron and aluminium alloy parts which had been subjected to fluctuating stresses, generally of small magnitude in relation to the ultimate tensile strength of the material of which they

were composed. He emphasized the dual nature of these fractures, which, in spite of the ductility of the alloys, were largely brittle, but which were, in part, none the less ductile. In the smoother areas, fracture had taken place as slowly, but as inevitably, as the march of time. Where, however, the discontinuity was ductile, this had occurred with dramatic suddenness—the hitherto unbroken but relatively small area of metal at long last, unable to sustain the oft-repeated load being imposed on it, gave way. Major Teed then disclosed the changes which repeated stresses produced in the mechanical properties and microstructure of the alloys subjected to them. In particular, he emphasized the quite remarkable effect of such stresses on a metastable aluminium alloy; in the zone of maximum stress, further precipitation had been produced, ultimately giving rise to the development of the initial crack.

In the third part of his talk, the lecturer dealt with the relationship of repeated stress to endurance at that stress. In this portion, *inter alia*, Major Teed showed an *S/N* curve made by T. T. Oberg. This he considered to be the best that had ever been produced. A very large number of specimens from the same bar had been tested, some of them up to 8,300,000,000 stress intervals. This had involved their being in a continuously operating rotating beam machine for well over a year.

Finally, the lecturer drew attention to a number of aspects of the subject which gave rise to anxiety, owing to lack of sound information. In particular, he mentioned scatter in endurance of apparently identical specimens tested under apparently identical conditions; the limited knowledge of the influence of stress concentrations on endurance; and the disappointing fatigue-resistance of the very strong age-hardening wrought aluminium alloys, especially those containing zinc, copper, magnesium, and manganese.

OTHER NEWS

Aluminium in Electrical Engineering

A Symposium on Aluminium in Electrical Engineering has been arranged by the Aluminium Development Association for Thursday and Friday, 16–17 May 1957, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, by courtesy of the Council of the Institution. Twelve papers by electrical engineers with experience in using aluminium will be presented in the course of three sessions under the following titles: (i) General and Economic Considerations in Using Aluminium in Electrical Engineering; (ii) Aluminium in Transmission and Distribution Lines; and (iii) Aluminium in Electrical Equipment.

The principal objects of the Symposium will be to present authoritative information on experience gained, and to indicate future potentialities for wide and full discussion by electrical engineers, together with the aluminium industry.

Papers will be sent in advance, as preprints, to those registering for attendance. At the Symposium, the papers at each session will be introduced by a rapporteur, so that maximum time will be available for discussion and for replies by the authors. The papers and full discussion will be published after the Symposium as a bound volume.

Requests for invitations to attend are open to electrical engineers and others with qualifications and experience in the electrical industry. Applications should be addressed to The Aluminium Development Association, 33 Grosvenor Street, London, W.1.

International Conference on Radio-Isotopes

An international scientific conference on the use of radio-isotopes in research will be convened by the United Nations Educational, Scientific and Cultural Organization in Paris from 16 to 27 September next. Preliminary discussions on the scope and organization of the conference took place at a meeting in Unesco House on 14 and 15 January of scientists from eight countries.

More than 1000 scientists are expected to attend the conference, the purpose of which will not be to adopt resolutions or recommendations, but to provide a broad exchange of information on newest developments in the use of radio-isotopes as instruments of research, as tracers, or as sources of radiation. The last conference of this nature was held in 1954 at Oxford, under the auspices of the Atomic Energy Research Establishment.

The conference will work in two main sections, one dealing with radio-isotopes in the physical sciences and the second with the biological sciences. The first section will cover such fields as geology and geophysics (including meteorology and oceanography) and metallurgical and industrial research.

Conference on "Metals at High Temperatures"

A Gordon Research Conference on "Metals at High Temperatures" will be held from 17 to 21 June 1957 at New Hampton School, New Hampton, New Hampshire, U.S.A. The Chairman will be Professor N. J. Grant.

Gordon Research Conferences are designed to stimulate research in universities, research foundations, and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled lectures and free discussion groups.

Requests for attendance at the Conference (which is limited to 100 persons), or for additional information, should be addressed to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, R.I.

Post-Graduate Course on Diffusion and Sintering

The Post-Graduate School of Physical Metallurgy at Sheffield University is holding a two-week course on "Diffusion and Sintering" from 29 April to 11 May 1957. The fee is £15. Applications should be made to the Professor of Metallurgy, The University, St. George's Square, Sheffield 1.

Summer School on "Corrosion Testing"

The Fourth Summer School on Corrosion will be devoted to "Corrosion Testing" and will be held at Battersea Polytechnic from 15 to 19 July 1957. A series of lectures by a panel of lecturers who are authorities on the subject will be given on the corrosion testing of metals, alloys, metallic and paint coatings, &c. The lectures will be supplemented by a demonstration of corrosion-testing apparatus and methods, and by visits to laboratories engaged on corrosion testing. Applications to attend the School should be made to the Secretary (Corrosion Testing), Battersea Polytechnic, Battersea Park Road, London, S.W.11.

"Materials for Reactor Engineering"

A discussion on "Materials for Reactor Engineering" will take place at a Summer Meeting of the Physical Society to be held at the Research Laboratory, Associated Electrical Industries, Ltd., Aldermaston, Berks, on 11 and 12 July. Particulars regarding attendance may be obtained from Mr. D. P. R. Petrie at the Research Laboratory.

DIARY

The Institute

29 April-3 May. Spring Meeting. (For details see p. 155 of the *Bulletin* for March 1957.)

Local Sections and Associated Societies

2 May. Leeds Metallurgical Society. "Some Aspects of Creep", by J. D. Meakin. (Large Chemistry Lecture Theatre, The University, Leeds 2, at 7.15 p.m.)

Other Societies

7 May. Society of Chemical Industry, Corrosion Group. Annual General Meeting and Chairman's Address: "A Pilgrim's Progress from Corrosion", by T. H. Turner. (14 Belgrave Square, London, S.W.1, at 6.30 p.m.)

9 May. Institution of Electrical Engineers, Utilization Section. "The World's Copper Resources", by H. J. Miller. (The Institution, Savoy Place, London, W.C.2, at 5.30 p.m.)

APPOINTMENTS VACANT

BRITISH WELDING RESEARCH ASSOCIATION requires a Metallurgist for a vacancy in its Development and Advisory Department in London. Degree or equivalent qualification in metallurgy and industrial experience, including welding technology, necessary. Excellent opportunity for close liaison with industrial establishments and with research workers in the welding field. Salary in scale £900-£1300, F.S.S.U. Pension Scheme. Apply: Secretary, B.W.R.A., 29 Park Crescent, London, W.1.

GRADUATE required for interesting research on the preparation, fabrication, and production of high-temperature materials for use in Nuclear Reactor applications. Candidates should have a degree in either metallurgy or chemistry or equivalent qualifications. Some experience in powder metallurgy or ceramics an advantage. West Country laboratory. Salary £900 per annum upwards, according to experience—contributory pension scheme. Apply Box No. 427, The Institute of Metals, 17 Belgrave Square, London, S.W.1.

METALLURGIST required for Laboratory of large Engineering Works in the South Midlands, must possess Honours degree in Metallurgy or equivalent. Main duties consist of scientific control of metallurgical processes and materials and the Company's products. Full details of age, experience, qualifications, &c., to Box 425, The Institute of Metals, 17 Belgrave Square, London, S.W.1.

OLD-ESTABLISHED NON-FERROUS METALS MANUFACTURERS in S.W. Lancashire require qualified metallurgists for Process Control. These vacancies are particularly suitable for young men who have completed, or are about to complete, their National Service. Applicants should write, stating details of education and qualifications, to Box No. 426, The Institute of Metals, 17 Belgrave Square, London, S.W.1.